GEOGRAPHIC SCHOOL BULLETINS

OF THE NATIONAL GEOGRAPHIC SOCIETY, WASHINGTON 6, D.C.

APRIL 23, 1956 VOL. XXXIV, NO. 27

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LHASA STREET SCENE—In Tibet's Capital the Old Ways and Traditions Remain amid Reports of Modernization. Mother and Child Shop in an Outdoor Market

313 HEINRICH HARRER

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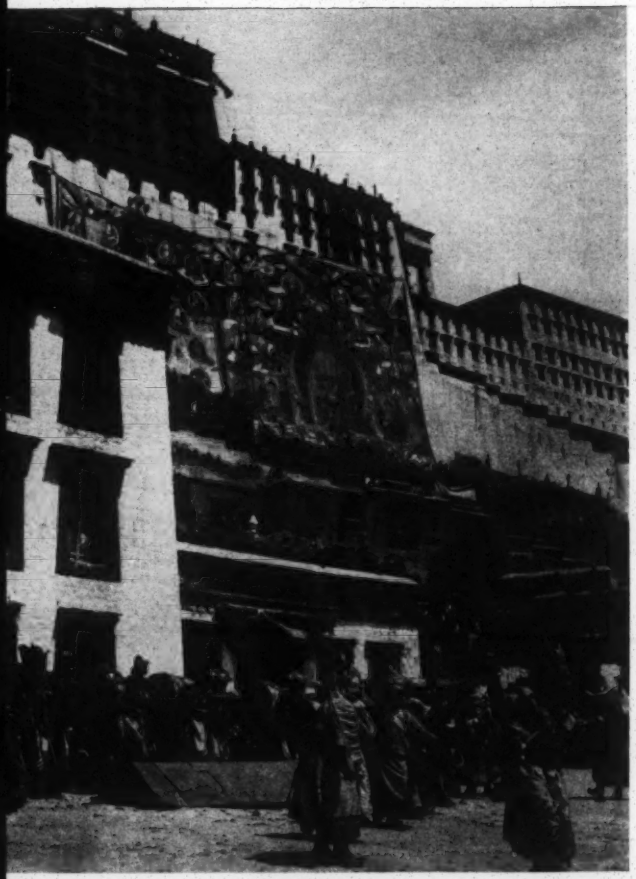
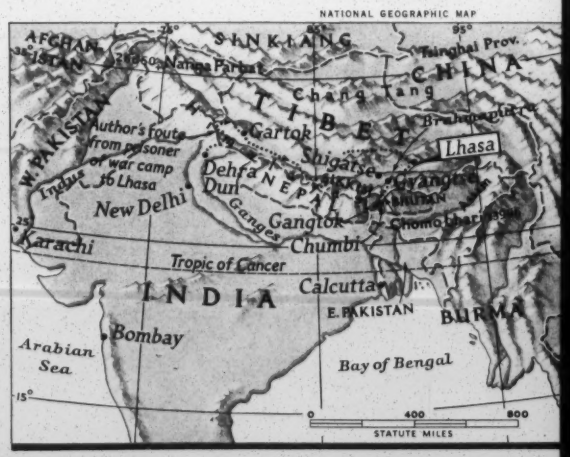


MASKED PRIESTS Dance in New Year's Rites Beneath the Banner-Decorated Potala

From outside the ornate gates of the dingy city drifts the humming and thumping of New Lhasa being erected. Government departments, a radio station, a newspaper, and offices for agricultural and mining specialists brought in by the Chinese will occupy the stone buildings. A droning overhead draws the brilliantly robed priests' attention to an airplane on its way to the new airfield traders tell of at Lhariguo—150 miles away.

Frozen Himalayan mountain passes, the lowest lost in clouds at 15,000 feet, and strict border guards usually had been sufficient to protect Tibet and its Lama form of Buddhism from outside interference. But six years ago the Dalai Lama, worshipped as the reincarnation of the Buddhist God of Mercy, fled to India when his primitive army dissolved before the mechanized Chinese occupation troops. In 1951 he returned as political and religious leader after a period of indoctrination in Peiping, China, which he still visits at intervals.

Before this god-king fled, tradition forbade Tibetans to look upon him. Somber monks carried his curtained palanquin on rare trips outside his



One of the remarkable adventures of our times was lived by Heinrich Harrer, whose photographs of remote Lhasa illustrate these pages. An Austrian interned in India during World War II, Harrer escaped (dotted line on map) across the frigid Himalayas, reached Tibet's capital, and became the Dalai Lama's tutor. The complete, color-illustrated account appears in National Geographic Magazine, *July, 1955.*

Change Comes to Unchangeable Tibet

Illustrations by Heinrich Harrer

The air of mystery and drama which has veiled Tibet since the dawn of time is being blown away by the reported rush to modernize the ancient country. But the Chinese communist bamboo curtain still hides this forbidden Asian land from the free world, making it difficult to know how much "transformation" actually has taken place.

Nomadic Tibetan traders crossing rocky foot trails into India to sell wool and hides exchange stories about the "new Tibet." These traders tell of hundreds of young priest-students leaving the huge lamaseries and abandoning the golden statues of Buddha to learn about hydroelectric plants and modern farming methods. To a primitive land which had not learned to use wheeled vehicles until recent years, Red China is reportedly introducing oil refineries and air travel.

Old priests in the whitewashed, 13-floor Potala (above) look out upon holy Lhasa, capital of Tibet. They see new and surprising sights. Small funnels of dust spray up behind scurrying trucks and plodding construction equipment. Automobiles arrive at intervals on the 1300-mile highway from China, completed last April.

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Corn...

A Native American, It Is The Leading U. S. Crop

FROM A PAINTING BY ELSE BOSTELMANN

The word corn may bring to your mind's eye visions of picnic suppers around glowing fires, sirup trickling over pancakes, or crumbly yellow muffins. When Americans say "corn" they mean that grain which grows in rows of kernels on a cob—and, incidentally, "as high as an elephant's eye" (though generally from three to 10 feet).

An Englishman applies the word to wheat, a Scot is likely to use it for oats. In actual fact, the Anglo-Saxon word is a general term for the grains from which we make bread—wheat, rye, barley, oats, rice, and maize (corn's dictionary name).

Maize (also called Indian corn) was probably first grown on the eastern slopes of the Andes. By 1492, when Columbus found it in Cuba, it had very likely also spread to Central and North America. It now grows all around the world, but in the United States it is the chief crop. It grows in every one of the 48 States, most extensively in the Corn Belt—Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, Ohio, and South Dakota. About a third of the area's nearly 150,000,000 acres of rich farmland are planted to corn every year.

A vast sea of cornfields yields the nation more than three *billion* bushels annually, representing greater wealth than all its gold, silver, iron, and coal combined. Corn is eaten in innumerable forms—in bread and on the cob, popped and in pudding, cut off and canned or frozen, mixed with beans as succotash, and processed into flakes for breakfast. Livestock and poultry eat most of the crop, and we eat their products.

But corn is not only food. This most versatile plant appears in such unlikely commodities as perfumes, matches, and phonograph records. In soap and starch it keeps us clean and crisp. As an ingredient of paints and varnishes, wall board, sizing for textiles, it helps build a home. Its husks stuff mattresses and wrap tamales. Its shaggy stalks decorate harvest festivals, and in sparklers it contributes to fireworks displays.

TIBETAN ETIQUETTE—Exchange of Silk Scarves, or *Khatas*, Takes the Place of Handshakes or Greeting Cards. Extended Tongue (left) Shows Respect. Inhaling Audibly at the Same Time, the Youth Shows His Betters He Is Not Defiling the Air

musty Potala. Swinging heavy sticks, his fierce bodyguards cleared the path of overzealous worshippers. Today, according to reports, he owns 11 cars, drives them himself. His telephone number is Lhasa 14.

Because so little is known of Tibet, its importance is sometimes overlooked. Though its population is no greater than that of Massachusetts, Tibet is as large as the United States east of the Mississippi River and north of the State of Tennessee.

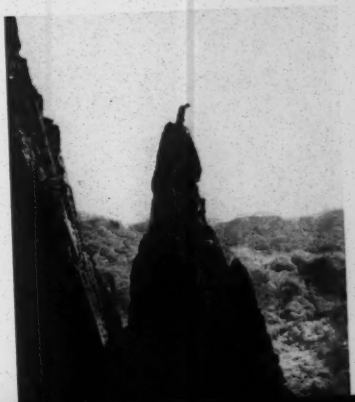
Intent young Chinese geologists probing Tibet's uncharted wastelands have reported finding iron ore, gold, coal, and mica. To process these raw materials and prevent floods, engineers are blocking the roaring Brahmaputra River with hydroelectric projects.

To remove this untouched wealth, wind- and sun-tanned Tibetans have blasted new mountain routes. Along with yaks and donkeys feeling their way around Himalayan peaks and across treeless deserts, trucks now roll on all-weather roads. The major cities and monasteries have been tied to industrial centers of China and the trade ports of India by these roads.

National Geographic References: ***Map***—Asia and Adjacent Areas (paper 50¢)
Magazine—May, 1949, "A Woman Paints the Tibetans" (75¢)
Aug., 1946, "Across Tibet from India to China" (75¢)
School Bulletins—Jan. 4, '54, "Boy Lamas Vie for Tibetan Leadership" (10¢)
Separate Color Sheets—8 sheets (23 pictures). Send for price list.

Dotting the region are sites connected with Coleridge, Southey, Ruskin, Shelley, and other great writers. Peter Rabbit's creator, Beatrix Potter, lived at Near Sawrey. Her farmhouse, preserved by the National Trust, delights children who recognize the Tailor of Gloucester's clock and the staircase where Tom Kitten's mother, Mrs. Tabitha Twitchit, mewed.

Summer brings crowds to Grasmere, with its vine-mantled cottages, hospitable inns, and tea shops (left). Nape's Needle (right) and other pinnacles provide practice courses for climbers. A special school offers mine and mill boys a chance to taste adventure close to home.



England's Lake District

Photographs by David S. Boyer, National Geographic Staff

(See also National Geographic Magazine, April, 1956)

SET like jewels among the hills, lakes made famous by artist and poet draw thousands of visitors to this lovely, misty corner of England. The Lakeland is a national park, its natural beauties guarded from such disasters as garish advertising, unsupervised building, and electric poles marching across sunny hayfields (above). Hostels dot the variegated district. Hikers like those at Tarn Hows (left) and Grey Knotts (far right) are never far from shelter. By foot and car, people come from all over the world to see Wordsworth's Dove Cottage (right) at Grasmere. Here the poet wrote immortal lines.

Zealand offers an exotic mixture of terrain and climate. Subtropical fruits and flowers bloom all year round in the sun-washed north. On South Island, snow-flanked alpine peaks rise from foggy fiords. Winding glaciers nose into rain-soaked valleys. Primeval tree ferns, living leftovers from the age of fossils, grow 50 feet high. Daisies blossom on trees, 20 feet above ground. Orchids blush beside snowbanks.

Before adventurous Maori settlers cruised to New Zealand from Pacific

HOWELL WALKER, NATIONAL GEOGRAPHIC STAFF

TREE FERNS NOD ABOVE AMBLING CATTLE—Looking Like Coal Age Relics, These Tall Plants Defy Extinction in New Zealand. So Does the Kiwi, Foraging among Them

island homes, the land claimed no native mammals except bats. Maoris introduced dogs and Polynesian rats. British colonists, arriving centuries later, set rabbits loose, then brought weasels, stoats, and ferrets to help control the bunny population. With nature's balance thus upset, the flightless kiwi found enemies it couldn't escape on its sturdy legs. It began to follow the path of its relative, the giant moa, toward extinction.

One species of the moa stood 12 feet tall, but Maoris killed them off for the sake of their meat. Another flightless bird, the brightly colored takahe, was also thought to be extinct. Its rediscovery in South Island's little-known Fiordland was described in *The National Geographic Magazine* of March, 1952. The kiwi, having barely survived animals and feather-seeking hunters, is now protected.

UMI

RON J. ANDERSON

Kiwi, New Zealand's Flightless Bird

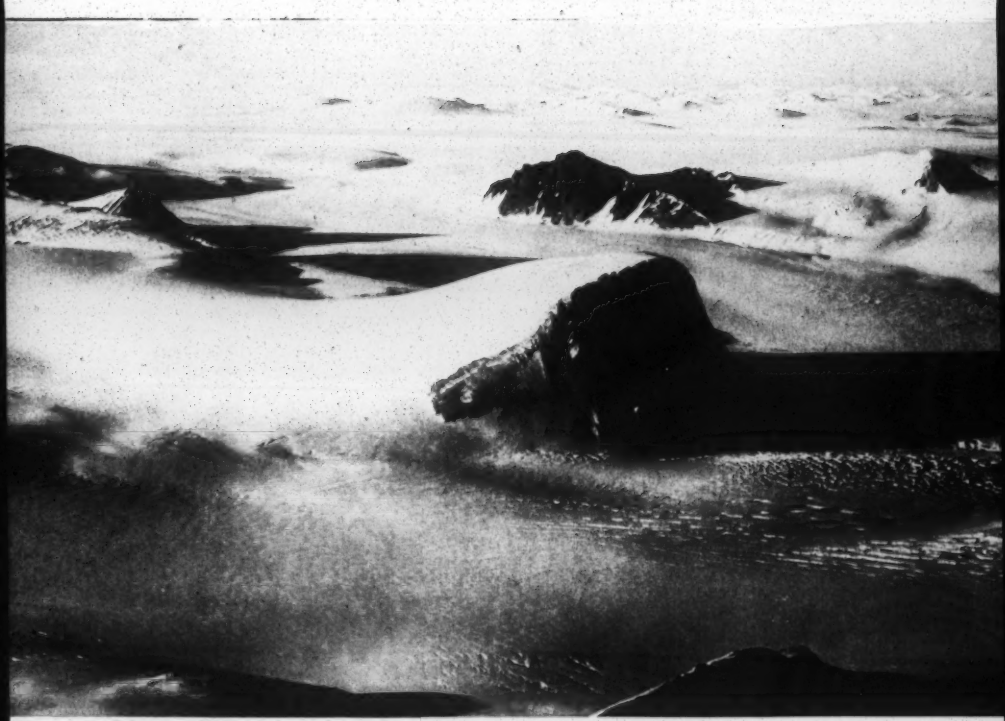
It's hard to believe that a four-pound bird can lay a one-pound egg. But the proud kiwi, posing here in a family portrait with her massive product, proves that it can be done. For doubting Thomases she sometimes comes through with a second king-size creation.

The kiwi egg is the largest—in proportion—of any bird's. A barnyard hen, for example, roughly matches the mother kiwi, yet the kiwi's egg weighs eight times as much.

In many other ways, the kiwi breaks the rules of birddom. It cannot fly. Its hairlike feathers hide rudimentary one-inch wings. It has whiskers like a cat, nostrils at the tip of its long beak, poor eyesight, a shy disposition.

It forages in New Zealand's wooded, ferny glades, mostly at night, snuffling petulantly as it searches for earthworms, insects, berries. It taps the ground, feeling for worm holes, pauses to rest, using its beak as a third prop, scampers into the underbrush when frightened, fights like a wildcat with its sharp claws when cornered. It rolls into a ball to sleep and burrows holes in the ground. After laying her egg, the female turns the job of incubating over to her mate.

Understandably, the first reports of kiwis, filtering back from freshly settled New Zealand, struck British scientists as impossibilities. But fuller knowledge of Britain's southernmost dominion reveals other oddities in this rich and distant land. Smaller than California, New



Like Islands, the Tops of Greenland's Icy Mountains Break Through an Ocean of Snow

the snow, then measured the length of time it took for the shock wave to penetrate ice, reach bedrock, and bounce up again (see next page).

The French party aimed to establish a base at Greenland's center where the dome of ice lies 10,000 feet thick. But troubles came fast during the expedition inland from Greenland's coast.

No sooner had the supply ship begun unloading in a mirrorlike fiord than a 30-foot wave, kicked up when a distant glacier calved a mighty iceberg, swept the shore, capsizing a motorboat, dunking men and supplies. With equipment finally landed, the party faced a heartbreaking task of road building up cliff faces in the midst of thawing weather. Ground melted and shifted underfoot as men struggled to get supplies to an altitude where thawing never occurs. Warm foehn winds caught up with the laboring weasels, bogged them in five feet of mud, changed gleaming ice highways into treacherous gray slush.

Sleepless nights and nerve-racked days brought the party beyond widening crevasses and crumbling snow bridges to the firm surface of the icecap. Ahead, some 200 miles, lay the site of the Central Icecap Station. Victor found the going almost as hard as before. Worn-out weasel tracks snapped frequently, then had to be warmed before men could repair them with bare hands. Finally the leader radioed Paris for new equipment. In a matter of hours a cargo plane was diverted from Africa to Greenland, made the drop, and vanished into white skies.

Arctic winter loomed near when Victor's party reached their central Greenland goal. Quickly they put together a prefabricated cabin, 26 by 16 feet, where eight men would spend the coming months of darkness.

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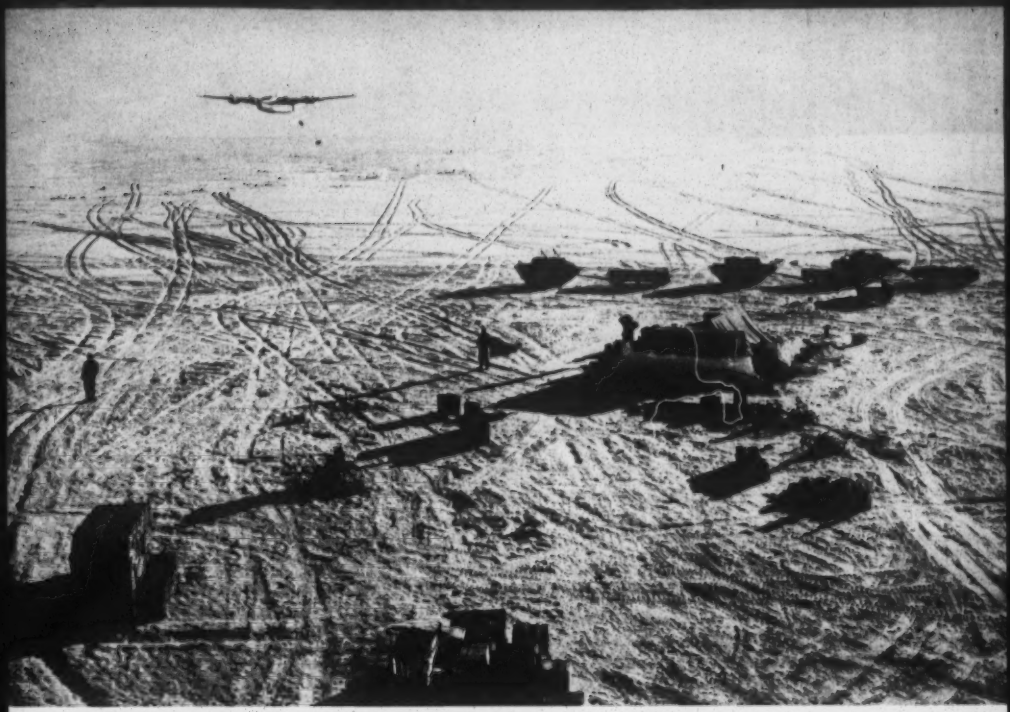

Probing Greenland's Icecap

Illustrations by Expéditions Polaires Françaises Photographers

No man has ever seen the four fifths of Greenland that lies buried beneath its icecap. This snowy overburden, 11,000 feet thick in places, covers all the interior of earth's largest island, shrouding its true contours in deeper mystery than the sea cloaks the ocean floor.

Yet in recent years scientists have invaded central Greenland to probe the icecap and discover the shape of the smothered land mass. Tractorlike weasels, cargo sleds, stacks of supplies, tents, and men (above) scratch the wind-scoured surface of Greenland snow as a supply plane thunders low, dropping provisions.

The 20th century came to this forgotten region thanks to Paul-Emile Victor, French polar explorer, who led expeditions to Greenland from 1948 to 1953 and who plans a new survey for International Geophysical Year. His complete story appears in the January, 1956, issue of *The National Geographic Magazine.*

Victor discovered that Greenland's ice measures sometimes more than two miles in depth, that its total volume would be enough to glaze the entire world with a 17-foot-thick frosting, that if the icecap melted, earth's oceans would rise 24 feet. He found that thousands of feet of ice had carved canyons in the island's true surface, sometimes 1,200 feet below sea level, nearly 1,000 feet lower than Death Valley.

These findings resulted from seismic soundings made at 10-mile intervals all across the 600-mile-wide island, and up and down its southern half. More than 600 times, scientists detonated a charge of dynamite in

GREENLAND'S COLD SAHARA

Weasels Carry Equipment That Measures Two-Mile-Thick Icecap

Buried some nine feet, the cabin remained warm and protected, despite raging blizzards and temperatures of 89 below zero. Even the snow tunnels that connected it with supplies never got colder than 40 below, though the weight of new snow piling on top of them reduced their height so that men had to crawl through them.

From late August until late June, the wintering party stuck it out. One evening a horn honked outside. Molelike figures scuttled from the tunnels to investigate, and fell on their leader with Gallic embraces. He had just arrived in his weasel. The ordeal was over.

Victor's discoveries give the world its first glimpse of how Greenland's surface would look were it not for 647,800 cubic miles of ice. To fill in further blanks in northern Greenland, he hopes to return next year to the great ice dome.

There appears to be little danger of its melting in the meantime!

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Map—Canada, Alaska & Greenland (paper 50¢)

Magazine—Jan., 1956, "Wringing Secrets from Greenland's Icecap" (75¢; 55¢ when ordered by schools and libraries); April, 1955, "Weather from the White North" (75¢); Oct., 1953, "We Followed Peary to the Pole" (75¢); Oct., 1951, "Far North with 'Captain Mac'" (75¢)

School Bulletins—Jan. 3, 1955, "Greenland Changes Its Way of Life" (10¢)

THEY MAP THE LAND BENEATH THE ICECAP

Seismic Instruments Record Time Required for Sound from Explosion to Go to Bedrock and Back